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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Lewis R. Dove, et al.

Serial No.: 10/762,143

Examiner: Benny T. Lee

Filing Date: January 20, 2004

Group Art Unit: 2817

Title: QUASI-COAX TRANSMISSION LINES

COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Sir:

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on February 28, 2006.

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) **\$500.00**.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)(1)-(5)) for the total number of months checked below:

- | | | |
|--------------------------|--------------|-----------|
| <input type="checkbox"/> | one month | \$ 120.00 |
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☐ The extension fee has already been filled in this application.

☒ (b) Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account **50-1078** the sum of \$500.00. At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account **50-1078** pursuant to 37 CFR 1.25.

A duplicate copy of this transmittal letter is enclosed.

Respectfully submitted,

Lewis R. Dove, et al.

By

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4/28/06

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Date: April 28, 2006

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☒ I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Appl. No. : 10/762,143 Confirmation No. 4168
Applicant : Lewis R. Dove, et al.
Filed : January 20, 2004
TC/A.U. : 2817
Examiner : Benny T. Lee

Docket No. : 10020701-1

Commissioner for Patents
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Alexandria, VA 22313-1450

APPEAL BRIEF

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

This Appeal Brief is submitted in response to the Final Office Action mailed November 1, 2005, and the Examiner's Advisory Action mailed November 16, 2005.

Appellant filed a Notice of Appeal on February 28, 2006.

Real Party in Interest

The real party in interest is Agilent Technologies, Inc., assignee of the above captioned patent application. Agilent Technologies, Inc. is a Delaware Corporation having its principal place of business in Palo Alto, California.

Related Appeals and Interferences

There are no related appeals and/or interferences.

Status of Claims

Claims 1-20 are pending in this application. Claims 1-5, 7-9, 11, 12, 14 and 15-18 currently stand rejected. Claims 6, 10, 13, 19, and 20 have been objected to as being dependent upon a rejected base claim, but the Examiner has indicated that these claims would be allowable if rewritten in independent form. The rejections of claims 1-5, 7-9, 11, 12, 14 and 15-18 are appealed.

A copy of the claims is attached as a Claims Appendix to this Appeal Brief.

Status of Amendments

An amendment after the final office action was filed on January 3, 2006. In the Advisory Action mailed on January 18, 2006, the Examiner indicated that the proposed amendments will be entered upon the timely submission of a Notice of Appeal and Appeal brief with requisite fees.

Summary of Claimed Subject Matter

The invention is variously embodied. Two embodiments are summarized below.

In one embodiment, apparatus (FIGS. 2-4 and 8; 200, 202; p. 4, lines 9-12; p. 6, lines 1-5) comprises a layer of dielectric (FIGS. 2-4 and 8; 208; p. 4, lines 13-17); a plurality of conductors (FIGS. 2-4 and 8; 204, 206; p. 4, lines 13-15); a plurality of dielectric mounds (FIGS. 2-4 and 8; 210, 212; p. 4, lines 13-17; p. 5, line 23 – page 6, line 9), wherein each of the conductors (FIGS. 2-4 and 8; 204, 206; p. 4, lines 13-15) is encapsulated between the layer of dielectric (FIGS. 2-4 and 8; 208; p. 4, lines 13-17) and a corresponding one of the dielectric mounds (FIGS. 2-4 and 8; 210, 212; p. 4, lines 13-17; p. 5, line 23 – page 6, line 9); and a first ground shield (FIGS. 2-4 and 8; 214; page 4, line 21-22) positioned below the layer of dielectric (FIGS. 2-4 and 8; 208; p. 4, lines 13-17), and a second ground shield (FIGS. 2-4 and 8; 216; p. 4, lines 22-24) positioned above the dielectric mounds (FIGS. 2-4 and 8; 210, 212; p. 4, lines 13-17; p. 5, line 23 – page 6, line 9).

In a second embodiment, a method (FIG.9; 900; p. 6, line 22 – p. 7, line 3) for forming transmission lines comprises depositing (FIG.9; 902; p. 6, lines 23-25) a plurality of conductors on a layer of dielectric that is positioned above a first ground shield; depositing (FIG.9; 904; p. 6, line 25 – p. 7, line 1) a respective mound of dielectric over each conductor; and depositing (FIG.9; 906; p. 7, lines 1-3) a second ground shield over the mounds of dielectric.

Grounds of rejection to be reviewed on appeal

1. Whether claims 1, 2, 7, 11, 12, 14, and 15 should be rejected under 35 USC 103(a) as being unpatentable over either Arledge et al. (U.S. Pat. No. 6,000,120; hereinafter "Arledge") or Shimada et al. (U.S. Pat. No. 6,353,189; hereinafter "Shimada") in view of Kobayashi (U.S. Pat. No. 5,357,138).
2. Whether claims 3-5, 8, and 16-18 should be rejected under 35 USC 103(a) as being unpatentable over Shimada et al. (U.S. Pat. No. 6,353,189; hereinafter "Shimada") in view of Kobayashi (U.S. Pat. No. 5,357,138).
3. Whether claim 9 should be rejected under 35 USC 103(a) as being unpatentable over the above rejection applied to claim 1 [either Arledge et al. (U.S. Pat. No. 6,000,120; hereinafter "Arledge") or Shimada et al. (U.S. Pat. No. 6,353,189; hereinafter "Shimada") in view of Kobayashi (U.S. Pat. No. 5,357,138)] and further in view of Dove et al. (U.S. Pat. No. 6,457,979; hereinafter "Dove").

Argument

1. Whether claims 1, 2, 7, 11, 12, 14, and 15 should be rejected under 35 USC 103(a) as being unpatentable over either Arledge et al. (U.S. Pat. No. 6,000,120; hereinafter "Arledge") or Shimada et al. (U.S. Pat. No. 6,353,189; hereinafter "Shimada") in view of Kobayashi (U.S. Pat. No. 5,357,138).

Claim 1 recites:

Apparatus, comprising:

- a) a layer of dielectric;
- b) a plurality of conductors;
- c) a plurality of dielectric mounds, wherein each of the conductors is encapsulated between the layer of dielectric and a corresponding one of the dielectric mounds; and
- d) a first ground shield positioned below the layer of dielectric, and a second ground shield positioned above the dielectric mounds.

Claim 15 recites:

A method for forming transmission lines, comprising:

- a) depositing a plurality of conductors on a layer of dielectric that is positioned above a first ground shield;
- b) depositing a respective mound of dielectric over each conductor; and
- c) depositing a second ground shield over the mounds of dielectric.

The Examiner asserts that:

... Arledge et al and Shimada et al (figs. 9-13) each pertain to shielded coaxial line structures comprising: ... a dielectric layer (312, in Arledge et al; 33 in Shimada et al). . . ; a dielectric mound or layer (342 in Arledge et al; 34 in Shimada et al); and an upper shielding layer (382) in Arledge et al; 36 in Shimada et al) deposited over the dielectric mound. . . However, each primary reference differs from the claimed invention in that plural shielded coaxial arrangements are not disclosed.

Kobayashi discloses plural shielded coaxial wiring patterns in a multi-layer structure of the type analogous to those in Arledge et al or Shimada et al.

Accordingly, it would have been obvious to have modified the shielded coaxial structures in either Arledge et al or Shimada et al to have respectively included a plurality of such shield [sic] coaxial structures in view of the exemplary teaching thereof by Kobayashi. . .

5/10/2005 Office Action, pp. 4-5 and 11/1/05 Office Action, pp.3-4

Although the Examiner admits that Arledge and Shimada fail to teach “plural shielded coaxial arrangements”, the Examiner still asserts that each teaches “a dielectric mound or layer”. Appellants first reiterate their previous argument that a plurality of “dielectric mounds” is not equivalent to a “dielectric layer”.

With respect to the failure of Arledge and Shimada to teach “plural shielded coaxial arrangements”, the Examiner now asserts, in part, that:

It should be noted that both Arledge and Shimada et al pertain to printed circuit boards (PCBs), which are in a “high density” configuration. Accordingly, one of ordinary skill in the art recognizes that in a “high density” environment, many electrical/electronic components are disposed on a PCB and thus necessarily need many replica transmission lines of the type depicted in the corresponding reference. In other words, to have a “high density” of electrical/electronic components inherently requires plural shielded transmission lines to connect such components. Accordingly, the “high density” nature of the PCBs in either Arledge et al or Shimada et al makes the PCBs of each reference capable of supporting more than the single shielded transmission line depicted in the corresponding reference.

11/1/05 Office Action, pp.5-6

Appellants disagree. While PCBs may have a high density configuration, this does not make it obvious to replicate the apparatus of Appellants’ claim 1 to form such a high density configuration using the method of Appellants’ claim 15. As one of ordinary skill in the art recognizes, high density configurations on PCBs may be implemented in a variety of different ways. Accordingly, a high density configuration of ‘shielded transmission lines’ on a PCB could be implemented in

any number of ways. However, neither Arledge nor Shimada disclose the implementation taught in Appellants' claims 1 and 15.

With respect to Arledge, Appellants note that Arledge discloses only a single conductor 332 sandwiched between two dielectrics 312, 342 (see FIG. 3). In light of Kobayashi's teachings, Appellants believe that, even if one of ordinary skill in the art *might* have been motivated to replicate the formation of Arledge's dielectric/conductor unit 312, 332, 342 multiple times on a single substrate, there is absolutely no teaching within Arledge or Kobayashi to 1) extend the dielectric 312 of Arledge so that it is capable of supporting multiple conductors 332, or 2) replace *only the lower ones* of Kobayashi's dielectrics mounds 3 with a single "layer of dielectric", while still maintaining Kobayashi's upper dielectric mounds 3.

Similarly to Arledge, Shimada discloses only a single conductor 31 sandwiched between two dielectrics 33, 34 (see FIG. 9). In light of Kobayashi's teachings, Appellants believe that, even if one of ordinary skill in the art *might* have been motivated to replicate the formation of Shimada's dielectric/conductor unit 33, 31, 34 multiple times on a single substrate, there is absolutely no teaching within Shimada or Kobayashi to 1) extend the dielectric 33 of Shimada so that it is capable of supporting multiple conductors 31, or 2) replace *only the lower ones* of Kobayashi's dielectrics mounds 3 with a single "layer of dielectric", while still maintaining Kobayashi's upper dielectric mounds 3.

While Kobayashi does teach an arrangement (in FIG. 3) wherein a plurality of conductors 1 are sandwiched between two layers of dielectric 3, Kobayashi fails to suggest that this arrangement might be modified to replace *only the top layer* of dielectric with a plurality of dielectric mounds, as taught by Appellants' claims 1 and 15. The Examiner has still failed to show any motivation or incentive within Kobayashi to combine Kobayashi with the teachings of Arledge or Shimada to form the apparatus of Appellants' claim 1.

Claims 1, 2, 7, 11, 12, 14 and 15 are believed to be allowable over the teachings of Arledge, Shimada and Kobayashi for at least the above reasons.

2. Whether claims 3-5, 8, and 16-18 should be rejected under 35 USC 103(a) as being unpatentable over Shimada et al. (U.S. Pat. No. 6,353,189; hereinafter "Shimada") in view of Kobayashi (U.S. Pat. No. 5,357,138).

Appellants assert that claims 3-5, 8 and 16-18 are allowable at least for the reason that they depend from either claim 1 or claim 15, which claims are believed to be allowable over the combined teachings of Shimada and Kobayashi for the reasons presented in Section 3 of these Remarks/Arguments, *supra*.

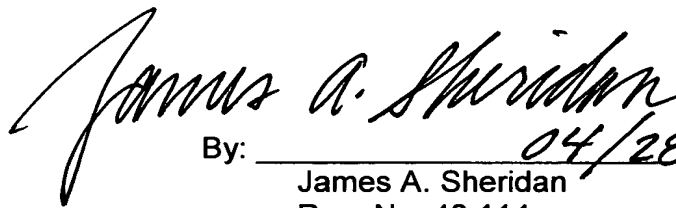
3. Whether claim 9 should be rejected under 35 USC 103(a) as being unpatentable over the above rejection applied to claim 1 [either Arledge et al. (U.S. Pat. No. 6,000,120; hereinafter "Arledge") or Shimada et al. (U.S. Pat. No. 6,353,189; hereinafter "Shimada") in view of Kobayashi (U.S. Pat. No. 5,357,138)] and further in view of Dove et al. (U.S. Pat. No. 6,457,979; hereinafter "Dove").

Appellants believe claim 9 is allowable at least for the reason that it depends from allowable claim 1, and because Arledge, Shimada, Kobayashi, and Dove fail to disclose the limitations of parent claim 1 (see previous argument, *supra*).

4. Conclusion

In summary, the art of record does not teach nor suggest the subject matter of Appellants' claims 1-5, 7-9, 11, 12, 14 and 15-18. These claims are therefore believed to be allowable.

Respectfully submitted,
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Atty. Docket No. 10020701-1

Claims Appendix

Claim 1: Apparatus, comprising:

- a) a layer of dielectric;
- b) a plurality of conductors;
- c) a plurality of dielectric mounds, wherein each of the conductors is encapsulated between the layer of dielectric and a corresponding one of the dielectric mounds; and
- d) a first ground shield positioned below the layer of dielectric, and a second ground shield positioned above the dielectric mounds.

Claim 2: The apparatus of claim 1, wherein the second ground shield is deposited on the dielectric mounds.

Claim 3: The apparatus of claim 2, further comprising a plurality of conductive vias in the layer of dielectric; the conductive vias coupling the first and second ground shields at points about the plurality of conductors.

Claim 4: The apparatus of claim 3, further comprising a plurality of ground pads deposited on the layer of dielectric; the ground pads providing a means for coupling the second ground shield to the conductive vias.

Claim 5: The apparatus of claim 2, further comprising a plurality of ground traces deposited on the layer of dielectric; the ground traces providing a means for coupling the second ground shield to the conductive vias.

Claim 6: The apparatus of claim 1, wherein at least some of the dielectric mounds are separated from one another by a distance that is less than a width of one of the dielectric mounds.

Claim 7: The apparatus of claim 1, wherein at least some of the dielectric mounds are substantially adjacent one another.

Claim 8: The apparatus of claim 1, wherein the layer of dielectric and the dielectric mounds are glass dielectrics.

Claim 9: The apparatus of claim 1, wherein the layer of dielectric and the dielectric mounds are ceramic dielectrics.

Claim 10: The apparatus of claim 1, wherein the layer of dielectric and dielectric mounds are KQ CL-90-7858 dielectrics.

Claim 11: The apparatus of claim 1, wherein the layer of dielectric and the dielectric mounds are thickfilm dielectrics.

Claim 12: The apparatus of claim 1, further comprising a substrate; the first ground shield being deposited on the substrate, and the layer of dielectric being deposited on the first ground shield.

Claim 13: The apparatus of claim 1, wherein the conductors and second ground shield comprise a thickfilm conductive paste.

Claim 14: The apparatus of claim 1, wherein the layer of dielectric, the dielectric mounds, the plurality of conductors, and the second ground shield comprise respective thickfilms.

Claim 15: A method for forming transmission lines, comprising:

- a) depositing a plurality of conductors on a layer of dielectric that is positioned above a first ground shield;
- b) depositing a respective mound of dielectric over each conductor; and
- c) depositing a second ground shield over the mounds of dielectric.

Claim 16: The method of claim 15, further comprising, prior to depositing the mounds of dielectric, forming a plurality of conductive vias in the layer of dielectric, at points about the plurality of conductors; the conductive vias contacting the first ground shield; wherein the mounds of dielectric and second ground shield are deposited to ensure contact between the second ground shield and conductive vias.

Claim 17: The method of claim 16, further comprising, prior to depositing the mounds of dielectric, depositing a plurality of ground pads on the layer of dielectric; the ground pads contacting the conductive vias.

Claim 18: The method of claim 16, further comprising, prior to depositing the mounds of dielectric, depositing a plurality of ground traces on the layer of dielectric; the ground traces contacting the conductive vias.

Claim 19: The method of claim 15, wherein the layer of dielectric and the respective mounds of dielectric are KQ CL-90-7858 dielectrics.

Claim 20: The method of claim 19, wherein each of i) the layer of dielectric, and ii) the mounds of dielectric, are deposited by printing multiple layers of thickfilm dielectric and then firing the layers.

Evidence Appendix

No extrinsic evidence was relied upon to support the arguments herein.

Related Proceedings Appendix

Appellants are unaware of any Board or court proceedings related to this Application.